

REMARKS

In the outstanding Office Action¹, the Examiner rejected claims 1 and 2 under U.S.C. §102(b) as being anticipated by Sato et al. (U.S. Patent No. 6,582,954, hereafter "Sato"); rejected claims 24-28 and 30 under U.S.C. §102(e) as being anticipated by Zenhausern et al. (U.S. Patent Application Publication No. 2004/0011650, hereafter "Zenhausern"); rejected claims 1-21, 24, and 29 under 35 U.S.C. §103(a) as being unpatentable over Zenhausern in view of Sato; and rejected claims 1-7 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of copending Application No. 11/221,940 (hereafter "the '940 Application") in view of Sato, and over claims 1-11 of copending Application No. 11/145,977 (hereafter "the '911 Application") in view of Sato.

By this Amendment, Applicants cancel claims 1 and 2, without prejudice or disclaimer, and amend claims 3, 4, 7-11, 13-15, 17-19, 21, 24, 26, 29, and 30. Support for the claim amendments made to claim 24 can be found in the Specification at, for example, page 44, lines 3-15, and page 48, lines 11-18. Claims 3-21 and 24-30 are pending and under current consideration.

Regarding the rejection of claims 1 and 2 under U.S.C. §102(b) as being anticipated by Sato, Applicants have canceled claims 1 and 2. Accordingly, the rejection of claims 1 and 2 under U.S.C. §102(b) as being anticipated by Sato is moot.

Applicants respectfully traverse the rejection of claims 24-28 and 30 under U.S.C. §102(e) as being anticipated by Zenhausern.

¹ The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement or characterization in the Office Action.

Claim 24, as amended, recites a hybridization detector, comprising,

a reaction region . . . ;

counter electrodes disposed in the reaction region; and

floating-potential electrodes dispersed in a matrix layout between the counter electrodes.

(Emphasis added). Zenhausern fails to teach or suggest at least the claimed floating-potential electrodes.

Zenhausern, at paragraph [0254], discloses:

Five electrode pairs 501, 502, 503, 504, and 505 are situated between four large outer electrodes 510, 511, 512, and 513. The number of electrodes is not limited to five pairs and four outer electrodes, and is intended to be illustrative only. The electrode pairs and outer electrodes may be advantageously connected to bondpads 515, which may be placed in a standard arrangement to facilitate packaging or integration with other modules. FIG. 4 depicts a detailed view of one of the five electrode pairs, electrode pair 501. The electrode pairs consist of two electrodes, 530 and 531, having interdigitating fingers with 2 μ m line and spacings. One of these interdigitated electrodes (per pair) functions as an electrophoretic/dielectrophoretic electrode, 530, and the other acts as a floating electrode, 531. . . . A DC voltage may be applied between outer electrodes 510, 511, 512, and 513 and inner dielectrophoretic/electrophoretic electrodes, such as electrode 531. Subsequently, an AC voltage, or other time-varying voltage, may be applied between fingers of electrode 5531, and fingers of floating electrode 532 allowed to float. This allows for the concentration of target analytes at floating electrode 532 (away from a powered electrode).

(Emphasis added). Accordingly, Zenhausern merely teaches electrode pairs 501, 502, 503, 505, and 505 are situated between electrodes 510, 511, 512, and 513 without being dispersed in a matrix layout. Further, Zenhausern teaches a DC voltage and an AC voltage are applied to outer electrodes 510, 511, 512, and 513, and electrode pairs 501, 502, 503, 504, and 505. For at least the above reasons, Zenhausern fails to teach a hybridization detector, comprising, "floating-potential

electrodes dispersed in a matrix layout between the counter electrodes," as recited in amended claim 24. Accordingly, claim 24 distinguishes over Zenhausern. Claims 25-28 and 30 depend from claim 24 and thus distinguish over Zenhausern at least due to their dependence.

Applicants respectfully traverse the rejection of claims 1-21, 24, and 29 under 35 U.S.C. §103(a) as being unpatentable over Zenhausern in view of Sato.

Claim 3, as amended, recites a sensor chip, comprising, among other things,
scanning electrodes arrayed in the reaction region; and

dielectrophoresis means for migrating the stretched nucleotide probes toward a pair of adjacent electrodes of the scanning electrodes by a non-uniform electric field generated by applying a voltage between the adjacent electrodes, wherein the adjacent electrodes are bridged by nucleotide probes immobilized between the adjacent electrodes.

(Emphasis added). Zenhausern and Sato, alone or combined, fail to teach at least the claimed adjacent electrodes of the scanning electrodes being bridged by nucleotide probes. Accordingly, claim 3 distinguishes over Zenhausern and Sato. Claims 4-6 depend from claim 3 and thus distinguish over Zenhausern and Sato at least due to their dependence.

Claim 8, as amended, recites a sensor chip, comprising, among other things,
scanning electrodes aligned in parallel in the reaction region; and

an electric field generator energizing the common electrode and at least one of the scanning electrodes by sequentially applying a voltage between the common electrode and the energized scanning electrode to generate an electric field in the reaction region, the nucleotide probes migrating toward the energized scanning electrode in response to the electric field, wherein the energized scanning electrode and a second scanning electrode are bridged by nucleotide probes immobilized between the energized scanning electrodes and the second scanning electrode.

(Emphasis added). Zenhausern and Sato, alone or combined, fail to teach at least the energized scanning electrode and the second scanning electrode being bridged by nucleotide probes. Accordingly, claim 8 distinguishes over Zenhausern and Sato. Claims 9-13 depend from claim 8 and thus distinguish over Zenhausern and Sato at least due to their dependence.

Claim 14, as amended, recites a sensor chip, comprising, among other things,

first scanning electrodes arrayed in the reaction region;

second scanning electrodes arrayed in the reaction region . . . ; and

an electric field generator sequentially applying a voltage between adjacent electrodes of the first scanning electrodes and between adjacent electrodes of the second scanning electrodes to energize the adjacent electrodes of the first scanning electrodes and the adjacent electrodes of the second scanning electrodes and to form an electric field in the reaction region, a first group of the nucleotide probes migrating toward the energized first scanning electrodes by dielectrophoresis, and a second group of the nucleotide probes migrating toward the energized second scanning electrodes by dielectrophoresis, wherein the adjacent electrodes of the first scanning electrodes are bridged by the first group of the nucleotide probes immobilized between the adjacent electrodes of the first scanning electrodes, and the adjacent electrodes of the second scanning electrodes are bridged by the second group of the nucleotide probes immobilized between the adjacent electrodes of the second scanning electrodes.

(Emphasis added). Zenhausern and Sato, alone or combined, fail to teach at least the adjacent electrodes of the first scanning electrodes being bridged by the first group of the nucleotide probes, and the adjacent electrodes of the second scanning electrodes being bridged by the second group of the nucleotide probes. Accordingly, claim 14 distinguishes over Zenhausern and Sato. Claims 15-17 depend from claim 14 and thus distinguish over Zenhausern and Sato at least due to their dependence.

Claim 18, as amended, recites a sensor chip, comprising, among other things,

scanning electrodes arrayed in the reaction region, an end of the scanning electrodes opposing the common electrode; [and]

means for immobilizing the stretched nucleotide probes between the energized scanning electrode and a second scanning electrode, wherein the energized scanning electrode and the second scanning electrode are bridged by the stretched nucleotide probes.

(Emphasis added). Zenhausern and Sato, alone or combined, fail to teach at least the energized scanning electrode and the second scanning electrode being bridged by the stretched nucleotide probes. Accordingly, claim 18 distinguishes over Zenhausern and Sato. Claims 19-21 depend from claim 18 and thus distinguish over Zenhausern and Sato at least due to their dependence.

Regarding claim 24, Zenhausern fails to teach a hybridization detector, comprising, "floating-potential electrodes dispersed in a matrix layout between the counter electrodes without coupling to a power source," as recited in amended claim 24. Sato fails to cure the deficiencies of Zenhausern. Accordingly, claim 24 distinguishes over Zenhausern and Sato. Claim 29 depends from claim 24 and thus distinguishes over Zenhausern and Sato at least due to its dependence.

Because the Examiner's nonstatutory obviousness-type double patenting rejections of claims 1-7 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of the '940 Application in view of Sato, and over claims 1-11 of the '911 Application in view of Sato are provisional, Applicants will address these rejections either when this application issues, or when any one of the '940 Application and the '911 Application issues.

In view of the foregoing remarks, Applicants respectfully request reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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